DRAFT Need to Know Criteria for Wastewater Treatment Operator License Exams

Wastewater Treatment Level C Curriculum

The following items are reference materials for the Wastewater Treatment Level C examination – in addition to the following a person should understand the Wastewater Level D reference materials plus the following:

Operation of Wastewater Treatment Plants, Volume I, Seventh Edition - Office of Water Programs, California State University, Sacramento

Chap 8 – Activated Sludge (Package Plants and Oxidation Ditches), Lessons 3

Wastewater Treatment Plants, Volume II, Seventh Edition - Office of Water Programs, California State University, Sacramento

Chap 11 – Activated Sludge (Operation of Conventional Activated Sludge Plants), Lessons 1, 2 & 4
Chap 12 – Sludge Digestion & Solids Digestion, Lessons 1 & 6
Chap 15 – Maintenance, Lessons 2, 3 & 7
Chap 16 – Laboratory Procedures and Chemistry, Lessons 5 & 7

WQs Sheets

The following items are subjects and skills a person should know and understand before taking the Wastewater Treatment Level C examination – Need to know all Wastewater Treatment Level D NTK plus the following:

1. Regulations
    a. What federal agency has the duty of developing and enforcing regulations to protect nations' waters?
    b. Major goals of the Clean Water Act
    c. Storm water from pipelines is regulated by?
    d. The Resource Conservation and Recovery Act
    e. Conventional pollutants
2. Biology/Chemistry/Laboratory
    a. Test used to estimate the organic loading
    b. Types of dechlorinating agents
    c. Specific Gravity
    d. Chlorine gas
    e. Blanks
    f. Percolation
    g. Laboratory: glassware, errors, sampling, holding times
    h. Hydrogen sulfide gas
    i. Solids: suspended, total, and Settleability
3. Math
    a. Units of flow measurements
    b. Detention time
    c. Pumping rates
    d. Volume
        i. Gallons
        ii. Cubic Feet
    e. Temperature calculations
    f. Horse Power
    g. Dosage
        i. 100% concentration
        ii. Less than 100% concentration
    h. Type and sizes of Chlorine cylinders
    i. Demand
    j. Velocity
    k. Hydraulic loading of trickling filters
    l. BOD calculations
    m. A weir overflow rate

4. Operation & maintenance
    a. Equipment shutdown procedures
    b. Lock out and tag out
    c. Manhole safety
    d. Chlorine leakage
        i. Equipment
        ii. Method
        iii. Ventilation
    e. Other plant safety
5. Clarifiers
    a. Average detention time
    b. Location of a primary unit
    c. Location of a secondary unit
    d. Sludge wasting
    e. Settling
6. Trickling Filters
    a. Filter slime
    b. Major parts of Trickling filters
    c. Types of media used
    d. Units of loading for trickling filters
    e. Operation problems of trickling filters
7. Metering
    a. Types of flow metering devices and characteristics
    b. Chlorine metering devices
    c. Chart recording
8. Activated sludge
    a. Observations and problems
    b. Types of aeration
    c. Sludge age
    d. Diffusers
    e. Modes of operation
9. Oxidation ditches
    a. Dissolved oxygen concentration
    b. Parts
    c. Controlling MLSS
    d. Modification of what type of process